There are **2 match(es)** in **1 book(s)** found for **(beta tantalum)**

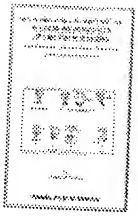
Book	Results	Rank Data (records)	Te
 Handbook of Physical Vapor Deposition (PVD) Processing ©1998	9.2.3 Growth of Nuclei References	●●●●●	Text
		●●●●●	Text

Table of Contents

Result Pages: **1**

L18 ANSWER 2 OF 6 INSPEC COPYRIGHT 2002 IEE
AN 2002:7239037 INSPEC DN B2002-05-2550F-038
TI High quality CVD TaN gate electrode for sub-100 nm MOS devices.
AU Kim, Y.H.; Lee, C.H.; Jeon, T.S.; Bai, W.P.; Choi, C.H.; Lee, S.J.; Xinjian, L.; Clarks, R.; Roberts, D.; Kwong, D.L. (Dept. of Electr. & Comput. Eng., Texas Univ., Austin, TX, USA)
SO International Electron Devices Meeting. Technical Digest (Cat. No.01CH37224)
Piscataway, NJ, USA: IEEE, 2001. p.30.5.1-4 of 951 pp. 10 refs. Also available on CD-ROM in PDF format
Conference: Washington, DC, USA, 2-5 Dec 2001
Sponsor(s): Electron Devices Soc. IEEE
Price: CCCC 0-7803-7050-3/01/$10.00
ISBN: 0-7803-7050-3
DT Conference Article
TC Experimental
CY United States
LA English
AB In this paper, for the first time, we present a detailed evaluation of physical and electrical properties of CVD TaN as a potential gate electrode material for sub-100 nm MOS device applications. Our results show that CVD TaN films deposited using TBTDET (tertbutylimidoirisdiethylamido tantalum) exhibit excellent thermal stability with underlying ultra thin SiO2 up to 1000 degrees C and extremely stable **work function** (5eV@800-1000 degrees C) suitable for p-MOS device applications. Compared to PVD TaN, MOS devices with CVD TaN gate electrode show desirable **work function** for p-MOS devices, excellent stability of gate oxide thickness, leakage current, and interface properties during high-temperature annealing, and superior gate dielectric TDDB reliability. These results suggest that CVD TaN can be used as the gate electrode on ultra thin gate oxide in self-aligned gate-first CMOS processing.
CC B2550F Metallisation and interconnection technology; B2530F

L18 ANSWER 1 OF 6 INSPEC COPYRIGHT 2002 IEE
AN 2002:7341256 INSPEC DN A2002-18-6855-046
TI Underlayer **work function** effect on nucleation and film morphology of chemical vapor deposited aluminum.
AU Rgers, B.R. (Dept. of Chem. Eng., Vanderbilt Univ., Nashville, TN, USA)
SO Thin Solid Films (3 April 2002) vol.408, no.1-2, p.87-96. 20 refs.
Doc. No.: S0040-6090(02)00144-X
Published by: Elsevier
Price: CCCC 0040-6090/02/$22.00
CODEN: THSFAP ISSN: 0040-6090
SICI: 0040-6090(20020403)408:1/2L.87:UWFE;1-W
DT Journal
TC Experimental
CY Switzerland
LA English
AB The dependence of early stage of dimethylaluminum hydride (DMAH)-sourced aluminum chemical vapor deposition on underlayer material was investigated. Identical process conditions were used to deposit the aluminum on TiN, TaN and Ti-W surfaces. Surface coverage and particle densities of aluminum deposited on TiN were much greater than those deposited on Ti-W or TaN. **Work function** measurements performed on the three metal surfaces suggest that the difference in nucleation rate on TiN compared to TaN and Ti-W is due its increased ability to donate electrons to the DMAH decomposition process.
CC A6855 Thin film growth, structure, and epitaxy; A8115H Chemical vapour deposition; A6150J Crystal morphology and orientation; A7330 Surface double layers, Schottky barriers, and work functions
CT ALUMINIUM; CRYSTAL MORPHOLOGY; CVD COATINGS; METALLIC THIN FILMS; NUCLEATION; **WORK FUNCTION**
ST **underlayer work function effect**; nucleation; film morphology; CVD Al film; dimethylaluminum hydride; TiN; TaN; Ti-W; surface coverage; particle densities; Al
CHI Al el; TiN sur, Ti sur, N sur, TiN bin, Ti bin, N bin; **TaN sur, Ta sur, N sur, TaN bin, Ta bin, N bin**; TiW sur, Ti sur, W sur, TiW ss,

L20 ANSWER 1 OF 4 JICST-EPlus COPYRIGHT 2002 JST
AN 1020435878 JICST-EPlus
TI Evaluation of Hafnium and **Tantalum Nitride** Thin Films Prepared by Magnetron Sputter Deposition with a Nitride Target.
AU GOTO YASUHITO; KIWA NOBUMASA; TSUJI HIROSHI; ISHIKAWA JUNZO
CS Kyoto Univ., Graduate School of Engineering, JPN
SO Shinku (Journal of the Vacuum Society of Japan), (2002) vol. 45, no. 3, pp. 309-312. Journal Code: G0194A (Fig. 3, Tbl. 2, Ref. 6)
CODEN: SHINAM; ISSN: 0559-8516
CY Japan
DT Journal; Short Communication
LA Japanese
STA New
AB We have prepared hafnium and **tantalum nitride** thin films by magnetron sputter deposition and evaluated their properties. Unlike the common preparation method of the nitride, that is, reactive sputtering, we adopted the direct sputtering of nitride target by pure argon plasma. The nitrogen concentration of the films was approximately the same with the target for hafnium nitride, but was slightly lower than the target for **tantalum nitride**. The film properties such as crystallinity and **work function** was measured. (author abst.)
CC BK14060A; BM09010H (539.23:546; 537.533.2)
CT hafnium compound; tantalum compound; nitride; plasma exposure; sputtered

L10 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:741504 HCAPLUS
DN 135:265753
TI Method to form transistors with multiple threshold voltages (VT) using a combination of different **work function** gate materials
IN Sundaresan, Ravi; Pan, Yang; Lee, James Yong Meng; Leung, Ying Keung; Pradeep, Yelehanka Ramachandramurthy; Zheng, Jia Zhen; Chan, Lap; Quek, Elgin
PA Chartered Semiconductor Manufacturing Inc., USA
SO U.S., 6 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01L021-336
ICS H01L021-4763
NCL 438197000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6300177	B1	20011009	US 2001-768488	20010125
	EP 1227521	A2	20020731	EP 2002-368009	20020124
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	JP 2002289852	A2	20021004	JP 2002-16632	20020125
PRAI	US 2001-768488	A	20010125		

AB A method of forming a gate electrode, comprising the following steps. A semiconductor substrate having an overlying patterned layer exposing a portion of the substrate within active area and patterned layer opening. The patterned layer having exposed sidewalls. Internal spacers are formed over a portion of the exposed substrate portion within the patterned layer opening on the patterned layer exposed sidewalls. The internal spacers being comprised of a WF1 material having a 1st **work function**. A planarized gate electrode body is formed within the remaining portion of the patterned layer opening and adjacent to the internal spacers. The gate electrode body being comprised of a WF2 material having a 2nd **work function**. The internal spacers and the gate electrode body forming the gate electrode.

IT **12033-62-4**, Tantalum mononitride
RL: DEV (Device component use); USES (Uses)
(transistors formation with multiple threshold voltages using)
RN 12033-62-4 HCAPLUS
CN Tantalum nitride (TaN) (6CI, 8CI, 9CI) (CA INDEX NAME)

N≡Ta

L18 ANSWER 3 OF 6 INSPEC COPYRIGHT 2002 IEE
AN 2002:7157668 INSPEC DN B2002-02-2340E-044
TI Field emission characteristics of CoSi2/TaN-coated silicon emitter tips.
AU Byung Wook Han (Dept. of Mater. Sci. & Eng., Korea Adv. Inst. of Sci. & Technol., Taejon, South Korea); Jae Sin Lee; Byung Tae Ahn
SO IEEE Electron Device Letters (Jan. 2002) vol.23, no.1, p.10-12. 18 refs.
Doc. No.: S0741-3106(02)00454-8
Published by: IEEE
Price: CCCC 0741-3106/02/$17.00
CODEN: EDLEDZ ISSN: 0741-3106
SICI: 0741-3106(200201)23:1L.10:FECC;1-6
DT Journal
TC Experimental
CY United States
LA English
AB This work has improved the emission characteristics of Si emitter tips by coating a CoSi2/TaN bilayer on the tips. The CoSi2 layer was grown in situ by a reactive chemical-vapor deposition of cyclopentadienyl dicarbonyl cobalt at 650 degrees C. The TaN was then deposited on the CoSi2 layer at 550 degrees C by a reactive sputtering of Ta with N as a reactive gas. The CoSi2/TaN-coated emitters showed a lower turn-on voltage and higher emission current than the CoSi2- or TaN-coated emitters due to the low **work function** by TaN and the easy transport of electron by CoSi2 with low resistivity. The long-term emission stability of CoSi2/TaN-coated Si emitter was as good as TaN-coated emitter.
CC B2340E Vacuum microelectronics; B2320 Electron emission, materials and cathodes
CT COBALT COMPOUNDS; CVD COATINGS; ELECTRON FIELD EMISSION; SILICON; SPUTTERED COATINGS; STABILITY; TANTALUM COMPOUNDS; VACUUM MICROELECTRONICS; **WORK FUNCTION**

L14 ANSWER 6 OF 8 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:280252 HCAPLUS
DN 131:66228
TI Behavior of thin Ta-based films in the Cu/barrier/Si system
AU Stavrev, Momtchil; Fischer, Dirk; Praessler, Frank; Wenzel, Christian; Drescher, Kurt
CS Semiconductor and Microsystems Technology Laboratory, Dresden University of Technology, Dresden, 01062, Germany
SO Journal of Vacuum Science & Technology, A: Vacuum, Surfaces, and Films (1999), 17(3), 993-1001
CODEN: JVTAD6; ISSN: 0734-2101
PB American Institute of Physics
DT Journal
LA English
AB This work concs. on the diffusion barrier stability of very thin (10 or 20 nm) .alpha.- or .**beta**.-**Ta**, TaN, Ta(O) and Ta(N,O) films in the Cu/barrier/Si system. Based on the classical theory of the thin film growth and know how of material transport in thin films, the various Ta-based films were classified according to their d. of free short-circuit paths. Using SEM, transmission electron microscopy, glow discharge optical emission spectroscopy and secondary ion mass spectrometry, the 20 nm thin polycryst. columnar-structured .**beta**.-**Ta** films were found to be stable up to 500 .degree.C for 1 h. After 1 h at 600 .degree.C Cu3Si was formed due to short-circuit diffusion of Cu throughout the .**beta**.-**Ta** films. The 20 nm thin giant-grained .alpha.-Ta films show equiv. performance to the .**beta**.-**Ta** films. On the other hand, the 10 nm thin stuffed nanocryst. face-centered-cubic (fcc.) TaN films were able to protect the Si from Cu diffusion up to at least 600 .degree.C/1 h. Ten nm thin amorphous-like Ta(N,O) and Ta(O) films also show barrier stability that is comparable to fcc. TaN. While Ta(N,O) tends to recrystallize mainly into hexagonal-close-packed Ta2N above 500 .degree.C, the Ta(O) remains amorphous even at 600 .degree.C. Besides the amorphous-like microstructure, the high recrystn. temp. of Ta(O) is the reason why the introduction of 5 nm thin Ta(O) film into the Cu/5 nm Ta(O)/5 nm .**beta**.-**Ta**/Si structure leads to a stability increase up to at least 600 .degree.C for 1 h.
IT **12033-62-4**, Tantalum nitride (TaN)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(diffusion **barrier**, temp.; behavior of thin Ta-based films in Cu/**barrier**/Si system)
RN 12033-62-4 HCAPLUS
CN Tantalum nitride (TaN) (6CI, 8CI, 9CI) (CA INDEX NAME)

L8 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2002 ACS
AN 1969:443383 HCAPLUS
DN 71:43383
TI Thermal emission properties of transition metal nitrides
AU Samsonov, G. V.; Fomenko, V. S.; Verkhoglyadova, T. S.
CS Inst. Probl. Materialoved., Kiev, USSR
SO Khim. Fiz. Nitridov (1968), 162-7. Editor(s): Samsonov, G. V. Publisher: Izd. "Naukova Dumka", Kiev, USSR.
CODEN: 21AZAC
DT Conference
LA Russian
AB Thermal emission properties of pulverized and sintered nitrides of Ti, Zr, V, Nb, and Ta were studied. The measurements on the pulverized samples were performed in closed vacuum tubes at 10-7 mm. Hg, and on the sintered pellets in a diode with a continual evacuation at (2-3) .times. 10-6 mm. Hg. The thermionic **work function** (.psi.) was calcd. at 1000-2000.degree.K. The values of .psi. at 1700.degree.K. are 3.74 for TiN, 3.78 for ZrN, 3.81 for VN, 3.91 for NbN, and 4.20 **ev.** for TaN. By x-ray diffraction, the compn. of the samples does not change in the course of the emission measurement. The results are discussed in terms of the formation of stable electron configuration and of the distribution of electrons on localized and collectivized ones.
IT **12033-62-4**
RL: PRP (Properties)
(electron thermionic emission from)
RN 12033-62-4 HCAPLUS
CN Tantalum nitride (TaN) (6CI, 8CI, 9CI) (CA INDEX NAME)

N≡Ta

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     FILE 'HCAPLUS' ENTERED AT 14:23:48 ON 09 DEC 2002
                E WORK FUNCTION/CT
                E E3+ALL/CT
L1         19336 S E2 OR E7 OR WORK FUNCTION OR E9

     FILE 'REGISTRY' ENTERED AT 14:25:55 ON 09 DEC 2002
                E N TA/ELF
L2           392 S E3

     FILE 'HCAPLUS' ENTERED AT 14:26:40 ON 09 DEC 2002
L3          3467 S L2
L4           274 S BETA(W)(TA OR TANTALUM)
L5            29 S L1 AND L3
L6            38 S L3 AND L4
L7            67 S L5-6
L8             2 S L7 AND (EV OR ELECTRON VOLT)
L9             0 S L5 AND L6
L10            4 S L7 AND WORK FUNCTION/TI

L13          522 S L2(L)(WORK OR FUNCTION OR FERMI OR BARRIER OR EV OR ELECTRON
L14            8 S L7 AND L13

     FILE 'INSPEC' ENTERED AT 14:38:56 ON 09 DEC 2002
                E TAN/CHI
L16          499 S E3-7
                E WORK FUNCTION/CT
                E E3+ALL/CT
L17         8853 S E1 OR WORK FUNCTION
L18            6 S L16 AND L17

     FILE 'JICST-EPLUS' ENTERED AT 14:43:02 ON 09 DEC 2002
L19         1349 S TAN OR TANX OR TANTALUM NITRIDE
L20            4 S L19 AND WORK FUNCTION
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L18 ANSWER 4 OF 6 INSPEC COPYRIGHT 2002 IEE
AN 2002:7136575 INSPEC DN A2002-03-7320A-020
TI First-principles study of the electronic properties of transition metal nitride surfaces.
AU Kobayashi, K. (Adv. Mater. Lab., Nat. Inst. for Mater. Sci., Ibaraki, Japan)
SO Surface Science (1 Nov. 2001) vol.493, no.1-3, p.665-70. 24 refs.
Doc. No.: S0039-6028(01)01280-8
Published by: Elsevier
Price: CCCC 0039-6028/01/$20.00
CODEN: SUSCAS ISSN: 0039-6028
SICI: 0039-6028(20011101)493:1/3L.665:FPSE;1-K
Conference: ISSI PDSC-2000. International Symposium on Surface and Interface: Properties of Different Symmetry Crossing 2000. Nagoya, Japan, 17-20 Oct 2000
Sponsor(s): Minstr. Educ., Culture, Sports, Sci. & Technol
DT Conference Article; Journal
TC Theoretical
CY Netherlands
LA English
AB Transition metal nitride (TMN) surfaces are investigated by using the first-principles molecular dynamics method. Electronic and structural properties of five systems (TiN, ZrN, NbN, HfN and TaN(001)-1*1) are calculated. The optimized surface structures and electronic properties (charge densities, electronic band structures, **work function**, etc.) are obtained. All calculated electronic states of surfaces are metallic. By the full structural optimization of the surface, the nitrogen and transition metal atoms on the top layer move outward and inward, respectively. This trend of atomic displacements on the outermost layer is similar to our previous results of transition metal carbide (TMC) surfaces. In most surfaces, the values of the **work function** for the TMN surfaces are lower than those for the TMC surfaces. The values of the **work function** for relaxed ZrN, NbN, HfN and TaN surfaces are lower than those for unrelaxed (ideal) surfaces. This lowering of the **work function** is different from our previous results of TMC surfaces.
CC A7320A Surface states, band structure, electron density of states; A6185 Modelling and computer simulation of solid structure; A6820 Solid surface structure; A7115A Ab initio calculations (condensed matter electronic structure); A7115Q Molecular dynamics calculations and other numerical simulations (condensed matter electronic structure); A7330 Surface double layers, Schottky barriers, and work functions
CT AB INITIO CALCULATIONS; HAFNIUM COMPOUNDS; MOLECULAR DYNAMICS METHOD; NIOBIUM COMPOUNDS; SURFACE STATES; SURFACE STRUCTURE; TANTALUM COMPOUNDS; TITANIUM COMPOUNDS; **WORK FUNCTION**; ZIRCONIUM COMPOUNDS
ST first-principles study; molecular dynamics method; surface structural properties; charge densities; electronic band structures; **work function**; structural optimization; MDM; surface electronic properties; TiN; ZrN; NbN; HfN; TaN
CHI TiN sur, Ti sur, N sur, TiN bin, Ti bin, N bin; ZrN sur, Zr sur, N sur, ZrN bin, Zr bin, N bin; NbN sur, Nb sur, N sur, NbN bin, Nb bin, N bin; HfN sur, Hf sur, N sur, HfN bin, Hf bin, N bin; **TaN sur, Ta sur, N sur, TaN bin, Ta bin, N bin**

L18 ANSWER 6 OF 6 INSPEC COPYRIGHT 2002 IEE
AN 2000:6566309 INSPEC DN B2000-05-2530F-045
TI High-k dielectrics and dual metal gates: integration issues for new CMOS materials.
AU Claflin, B.; Flock, K.; Lucovsky, G. (Dept. of Phys., North Carolina State Univ., Raleigh, NC, USA)
SO Ultrathin SiO/sub 2/ and High-K Materials for ULSI Gate Dielectrics. Symposium
Editor(s): Huff, H.R.; Richter, C.A.; Green, M.L.; Lucovsky, G.; Hattori, T.
Warrendale, PA, USA: Materials Research Society, 1999. p.603-8 of xvii+615 pp. 12 refs.
Conference: San Francisco, CA, USA, 5-8 April 1999
DT Conference Article
TC Experimental
CY United States
LA English
AB Several metal and conducting metal nitride candidates were investigated for alternative gate electrode applications in future complimentary metal-oxide-semiconductor (CMOS) devices. High frequency capacitance-voltage (CV) measurements were performed on n-MOS and p-MOS capacitors with Al, Ta, TaN, TiN, or W2N gates and ultra-thin SiO2/Si3N4 dielectric stacks. The **work functions** of Al and Ta were close to the conduction band of Si as expected while all the metal nitrides had **work functions** slightly above mid-gap. The thermal stability of the metal nitrides and the metal/dielectric interfaces was studied by Auger electron spectroscopy (AES) following rapid thermal annealing (RTA). Integration requirements for dual metal gate electrodes in future CMOS devices are discussed.
CC B2530F Metal-insulator-semiconductor structures; B2550F Metallisation and interconnection technology; B2810 Dielectric materials and properties; B2550A Annealing processes in semiconductor technology
CT AUGER ELECTRON SPECTRA; DIELECTRIC THIN FILMS; MOS CAPACITORS; RAPID THERMAL ANNEALING; SEMICONDUCTOR DEVICE METALLISATION; THERMAL STABILITY; **WORK FUNCTION**
ST high-k dielectric; dual metal gate electrode; process integration; metal; conducting metal nitride; CMOS device; high frequency capacitance-voltage characteristics; n-MOS capacitor; p-MOS capacitor; ultrathin SiO2/Si3N4 dielectric stack; **work function**; thermal stability; metal/dielectric interface; Auger electron spectroscopy; rapid thermal annealing; Al; Ta; TaN; TiN; W2N; SiO2-Si3N4
CHI Al int, Al el; Ta int, Ta el; **TaN int, Ta int, N int, TaN bin, Ta bin, N bin**; TiN int, Ti int, N int, TiN bin, Ti bin, N bin; W2N int, W2 int, N int, W int, W2N bin, W2 bin, N bin, W bin; SiO2-Si3N4 int, Si3N4 int, SiO2 int, Si3 int, N4 int, O2 int, Si int, N int, O int, Si3N4 bin, SiO2 bin, Si3 bin, N4 bin, O2 bin, Si bin, N bin, O bin

L10 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:290840 HCAPLUS
DN 136:317823
TI **Work function** tuning for MOSFET gate electrodes with aluminum/titanium nitride bilayer structure
IN Zheng, Jun-Fei; Doyle, Brian; Bai, Gang; Liang, Chunlin
PA Intel Corporation, USA
SO U.S., 11 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01L029-76
NCL 257407000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6373111	B1	20020416	US 1999-451696	19991130
	US 2002106858	A1	20020808	US 2002-71144	20020206
PRAI	US 1999-451696	A3	19991130		

AB Insulated gate field effect transistors having gate electrodes with .gtoreq.2 layers of materials provide gate electrode **work function** values that are similar to those of doped polysilicon, eliminate the poly depletion effect and also substantially prevent impurity diffusion into the gate dielec. Bi-layer stacks of relatively thick Al and thin TiN for n-channel FETs and bi-layer stacks of relatively thick Pd and thin TiN, or relatively thick Pd and thin TaN for p-channel FETs are disclosed. Varying the thickness of the thin TiN or TaN layers between a 1st and 2nd crit. thickness may be used to modulate the **work function** of the gate electrode and thereby obtain the desired trade-off between channel doping and drive currents in FETs.

IT **12033-62-4**, Tantalum nitride (TaN)
RL: DEV (Device component use); USES (Uses)
(Pd/TaN bilayer structure; **work function** tuning for MOSFET gate electrodes with aluminum/titanium nitride bilayer structure)
RN 12033-62-4 HCAPLUS
CN Tantalum nitride (TaN) (6CI, 8CI, 9CI) (CA INDEX NAME)

N≡Ta

L20 ANSWER 2 OF 4 JICST-EPlus COPYRIGHT 2002 JST
AN 1010224847 JICST-EPlus
TI Low Resistivity **TaNx**/Ta/**TaNx** Metal Gate FDSOI-CMOS Technology Featuring Low-Temperature Processing.
AU SHIMADA HIROYUKI; OSHIMA ICHIRO; NAKAO SHIN'ICHI; NAKAGAWA MUNEKATSU; SUGAWA SHIGETOSHI
OMI TADAHIRO
CS Tohokudai Daigakuinkogakukenkyuka
Tohoku Univ., New Ind Creation Hatchery Cent, JPN
SO Denshi Joho Tsushin Gakkai Gijutsu Kenkyu Hokoku (IEIC Technical Report (Institute of Electronics, Information and Communication Enginners)), (2000) vol. 100, no. 477(SDM2000 158-166), pp. 23-30. Journal Code: S0532B (Fig. 15, Ref. 13)
CY Japan
DT Journal; Article
LA Japanese
STA New
AB Low-resistivity(-15.MU..OMEGA.cm) bcc-phased tantalum metal gate CMOS technology having **Tantalum Nitride**(**TaNx**) buffer layer have been developed, featuring low-temperature processing. **TaNx** works as a seed layer which helps self-growth of bcc-phased tantalum film by hetero-epitaxy. In this paper, we demonstrate excellent characteristics of Fully-Depleted Silicon-On-Insulator(FDSOI) CMOS devices using **TaNx**/bcc-Ta/**TaNx** stacked metal gate structure(<1.OMEGA./.SQU.). Furthermore, transistor characteristics using Silicon Nitride(Si3N4) as a gate insulator formed by microwave-excited high-density plasma are also shown. (author abst.)
CC NC03070N (621.382.3)
CT low temperature; semiconductor process; tantalum; tantalum compound; nitride; SOI structure; gate(semiconductor); CMOS structure; FET; buffer layer; current-voltage characteristic; **work function**; thin film condenser
BT temperature; production process(control); process; 5A group element;

W.F. TaN_x > W.F. β-Ta